

B6^{end} 29. The method of claim 24, wherein the plasma comprises between about 25% and about 75% by volume of argon.

30. The method of claim 24, wherein the plasma is generated by delivering a power level of between about 10 watts and about 500 watts to the processing chamber. --

REMARKS

This is intended as a full and complete response to the Office Action dated July 5, 2000. Claims 1-23 are pending in the application and stand rejected. Claims 3, 10, 15, and 16 are objected to for being dependent upon a rejected base claim. Applicants have cancelled claims 2 and 9, added new claims 24-30, and have further amended the pending claims to correct matters of form and to more clearly recite aspects of the invention.

Claims 3, 10, 15, and 16 stand objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicants have added new claims 24-30 to include the subject matter of claims 3, 10, 15, and 16. New claim 3 has been written in independent form including all the limitations of the base claim and any intervening claims as new claim 24. Applicants have also rewritten claims 10, 15, and 16 as new claims 25-28 to be dependent on claim 24. Applicants submit that the base claim 24 is allowable as noted by the Examiner and that the claims dependent therefrom are also allowable.

Claim 4 stands rejected under 35 U.S.C. §112, second paragraph. Applicants have amended claim 4 obviating the rejection, and respectfully request withdrawal of the same.

Claims 1 and 5 stand under 35 U.S.C. §102(b) as being anticipated by *Seita et al.* (U.S. Pat. No. 5,527,718). The Examiner states that *Seita et al.* discloses a process for removing impurities from a polycide electrode by exposing a patterned substrate surface to a plasma treatment comprising argon, helium, and hydrogen, inherently in a processing chamber.

Applicants respectfully traverse the rejection. *Seita et al.* discloses a method for removing impurities from a polycide film using a heat treatment. *Seita et al.* discloses a heat treatment comprising a carrier gas of nitrogen and/or argon and/or helium and/or hydrogen plus monosilane and/or polysilane at a temperature of 450°C to 700°C. *Seita et al.* does not teach,

show, or suggest a method for processing a substrate in a processing chamber, comprising exposing a patterned substrate surface to a plasma consisting of argon, helium and hydrogen, wherein the plasma comprises less than about 75% by volume of argon, as recited in the base claims. Accordingly, Applicants respectfully request withdrawal of the rejection.

Claims 2, 4, 6, 7, 8, 11-14, and 17-23 stand rejected under 35 U.S.C. §103(a) as obvious over *Konecni et al.* (EP 849,779 A2) in view of *Davis et al.* (U.S. Pat. No. 5,248,636). The Examiner states that *Konecni et al.* discloses a process for forming a semiconductor structure by plasma etching comprising exposing a patterned substrate surface to a plasma comprising argon, helium and hydrogen in a processing chamber. Regarding claims 2, 14, and 18-20, the Examiner states that *Konecni et al.* discloses a plasma comprising less than about 75% by volume of argon. The Examiner further states that *Davis et al.* discloses a plasma processing method to treat a substrate comprising the step of increasing the flow rate of helium to increase the etch rate. The Examiner asserts that it would have been obvious to modify the process of *Konecni et al.* by adding the flow rate of helium to increase the etch rate as per *Davis et al.* because a high content of helium enhances the single crystal silicon etch rate in order to achieve a high degree of etch rate uniformity of the patterned substrate.

Applicants respectfully traverse the rejection. *Konecni et al.* discloses a process for forming a semiconductor structure comprising ion cleaning wherein the ion plasma comprises argon, helium, and hydrogen, as the Examiner stated. *Konecni et al.*, in particular, teaches a hydrogen flow rate of 1 sccm with an argon flow rate of 4 sccm which amounts to a plasma comprising 80% by volume of argon (4 sccm of argon/5 total sccm). Therefore, Applicants submit that the reference does not teach, show, or suggest a plasma comprising less than about 75% by volume of argon, as recited in the claims.

Applicants further traverse the rejection on grounds that the combination of *Konecni et al.* and *Davis et al.* does not expressly or impliedly teach, show, or suggest the claimed invention. As stated above, *Konecni et al.* discloses a process for forming a semiconductor structure by plasma etching comprising ion cleaning using a plasma of argon, helium and hydrogen in a processing chamber. *Davis et al.* discloses a method for processing a substrate by exposing the substrate to a remote plasma source and an *in situ* plasma source. *Davis et al.* merely teaches that the addition of helium and fluorine to the remote plasma source and the *in situ* plasma source improved the etch rates compared to the remote and *in situ* plasmas alone.

Davis et al. does not teach, show, or suggest that an increased helium content enhances the etch rate in order to achieve a high degree of etch rate uniformity of the patterned substrate. Therefore, the references, when viewed individually or in light of one another, do not teach, show, or suggest a method for processing a substrate in a processing chamber, comprising exposing a patterned substrate surface to a plasma consisting of argon, helium and hydrogen, wherein the plasma comprises less than about 75% by volume of argon. Further, the references, when viewed individually or in light of one another, do not teach, show, or suggest a method for processing a substrate in a processing chamber, comprising exposing a patterned substrate surface to a plasma consisting of argon, helium, and hydrogen, and increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the plasma comprises less than about 75% by volume of argon. Accordingly, Applicants respectfully request withdrawal of the rejection and submit that the claims are in condition for allowance.

Applicants also note the prior art made of record. It is believed that the secondary references are no more pertinent to the claimed invention than the primary references cited in the office action. Therefore, it is believed that a detailed discussion of the secondary references is not deemed necessary for a full and complete response to this office action.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims 1-30 are in condition for allowance and respectfully request that claims 1-30 be allowed.

Respectfully submitted,



B. Todd Patterson
Registration No. 37,906
THOMASON, MOSER & PATTERSON, L.L.P.
3040 Post Oak Blvd., Suite 1500
Houston, Texas 77056
Telephone 713/623-4844
Facsimile 713/623-4846

ATTORNEY FOR APPLICANTS